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(54) Title: PROCESS FOR PREPARING PASTRY PRODUCTS HAVING ANTACID ACTIVITY

(57) Abstract

Process for preparing pastry products having antacid activity wherein 24-50 % by weight of magnesium oxide and 24-50 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the known raw materials of a pastry product in any phase of the making up of the dough, then the dough thus obtained is baked at a temperature between 130 and 160°C.

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PROCESS FOR PREPARING PASTRY PRODUCTS HAVING ANTACID
ACTIVITY

Background of the invention

One of the most frequent disease symptoms of
5 modern age is pyrosis (cardialgia) which can cause several
serious illnesses, e.g. ulcer or it would be the
concomitant symptom of serious illnesses. The cause of
pyrosis is excessive acid production, its therapy is the
stopping of the excessive acid production and the binding
10 or neutralization of the excess of gastric acid,
respectively.

The most important compositions used in the therapy
are the antacids, one of them is Nilacid. This is a tablet
containing 250 mg of magnesium trisilicate, 120 mg of
15 magnesium oxide, 50 mg of disodium hydrogen phosphate,
50 mg of bismuth oxide nitrate as active ingredient per
dosage unit. Beside the tablet form several antacids
formulated into other forms are commercially available.

The efforts are well-known to introduce pharmaco-
20 logically active substances e.g. vitamins in other forms
into the body, for example "masking" them as foodstuffs
(e.g. chocolate products). This is particularly
advantageous if the composition should be administered to
patients with whom it is difficult to cooperate (infants
25 or aged persons).

In the Hungarian Patent No. 164.554 a composition
producing the feeling of fullness is described which is
suitable for preparing foodstuffs having a low
carbohydrate content.

30 Hungarian Patent No. 171.995 relates to a process

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for the preparation of low caloric bakery and confectionary products. According to this process the edible carbohydrates or a part of them is replaced by methyl cellulose which is not edible but upon the effect of the gastric 5 juices it swells. A bakery product is prepared from this mixture. After consumption the product swells in the gastrointestinal tract, thereby the feeling of fullness is produced and at the same time no calorie surplus is introduced into the body. By the swallowed product having 10 an increased volume the intestinal peristalsis is promoted as well.

No pastry product is hitherto known which could make possible to control the acid content of the stomach of patients having hyperacidity. The existence of a 15 product like this would be very advantageous because it would relieve these patients of their painful symptoms without the need of taking a medicine. Thereby it could be avoided that consciousness of illness should develop. A composition like this would meet the claim of the 20 patients having hyperacidity to a foodstuff-like product as well which can be munched continually as at doctor's advise they would possibly munch something continually instead of eating three times a day.

For this purpose the waffle or biscuit like 25 products would be particularly suitable which themselves would bind the surplus of gastric acid to a small extent.

Brief description of the invention

The present invention is based on the recognition 30 that a pastry product having antacid activity meeting the above requirements can be prepared by adding magnesium oxide and aluminium hydroxide to the known components of

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the pastry products.

Detailed description of the invention

According to the present invention to the known raw materials of a pastry product 24-50 % by weight of magnesium oxide and 24-50 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added in any phase of the making up of the dough, then the dough thus obtained is baked at a temperature between 130 and 160 °C.

In the process of the present invention any raw material mixture generally used for the preparation of waffle or biscuit like products can be used as raw material. Both salty and sweet raw material mixtures can be used, if desired the salty mixture can be enriched with cheese or flavoured and the sweet mixture can be made from whipped egg-white.

For the preparation of the raw material mixture known components, e.g. flour, starch, baking powder, butter, margarine, milk, water and other usual materials and additives, flavouring agents (e.g. salt, cocoa powder, cheese, coconut gratings, aroma substances) can be used. These substances are subjected to stirring, kneading and if desired rising operations known per se and thus a dough ready to be baked is obtained. According to the invention the antacid substances in any phase of the preparation of the dough can be added to the mixture under stirring. Their addition does not disturb the preparation of the raw mixture.

The antacid substances used in the process of the present invention are widely used per se in the therapy of

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hyperacidity. In connection with their use no toxicity problem has emerged. The obstacle to their even wider use is that as a consequence of their tastelessness they give the impression as if one chewed sand.

5 A further advantage of the pastry products having antacid activity prepared according to the invention is that in contrast with the known pharmaceutical compositions having antacid activity which quickly bind the surplus of gastric acid and become ineffective, in case of the
10 antacid pastry products the binding of the acid is protracted for a longer period, this is favourable to the formation of a good general condition of the patient. Thus the person who consumes the product of the present invention is freed of the unpleasantness accompanying the
15 rapid change of the amount of gastric acid.

The fact that in case of the antacid pastry products prepared by the process of the present invention the binding of the acid is protracted in time is proved by the following tests.

20 The tests were carried out with the so called constant pH-method. Accordingly 100 ml of an aqueous solution (a buffer consisting of 20,6 ml of a 0,2 M disodium hydrogen phosphate solution and 79,4 ml of a 0,1 M citric acid solution and having a pH-value of 3,
25 described in Ph.Hg.VI, vol. I. on page 359) are filled into a titration flask and a certain amount of the antacid substance to be tested is added under stirring to this solution. The pH-value of the solution is measured and when it exceeds pH = 3 by the dropwise addition of 1 N
30 hydrochloric acid the pH-value is adjusted to 3. On Fig. 1 the time elapsed from the beginning of the test is indicated on the horizontal axis and the volume of the

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1 N hydrochlorid acid added on the vertical axis. The titration was carried out according to the biological conditions at 37 °C.

On curve 1 the test results of 1.79 g of the
5 antacid waffle of Example 1, on curve 2 those of the mixture consisting of 0.2 g of magnesium oxide and 0.2 g of aluminium hydroxide and on curve 3 those of one Nilacid tablet are indicated. The plots of each curve indicate the mean values of 5 parallel measurements.

10 From the curves given on Fig. 1 it can be seen that by the mixture of the two compounds and by Nilacid tablet the acid is bound relatively quickly (the curve rises steeply) while in case of the waffle prepared according to the invention the binding of the acid is slow,
15 it does not cause quick changes in the gastric acid content. Thus the pharmacological effect of the product of the present invention is milder and more steady. According to curve 1 a smaller amount of acid is bound by the given amount of the waffle than by the other two
20 substances but this is of no importance because by frequent "munching" of the waffle a larger amount is introduced into the stomach.

Further details of the process according to the invention are illustrated by the following non limiting examples.

25 Example 1

1 egg is beaten until it is fluffy, then 150 ml of water, 250 g of wheat flour, 50 g of grated cheese, 5 g of sodium chloride and 250 ml of soda-water are added. The mixture is thoroughly blended and allowed to

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- stand at 0 °C overnight. The next day 3 g of baking powder, 60 g of magnesium oxide and 60 g of aluminium hydroxide are added under stirring, the dough is allowed to stand at room temperature for an hour, then from the dough 5 on an oiled sheet 75 pieces of round waffles are baked at 130-160 °C. Each waffle disc is cut into four pieces, thus about 300 pieces of antacid waffles having an average weight of 1.79 g are obtained, each containing 0.2 g of magnesium oxide and 0.2 g of aluminium hydroxide.
- 10 The process is repeated with the difference that on the next day 3 g of baking powder, 100 g of magnesium oxide and 100 g of aluminium hydroxide are added to the dough. The waffles thus obtained contain 0.33 g of magnesium oxide and 0.33 g of aluminium hydroxide.
- 15 The process is repeated with the difference that on the next day 3 g of baking powder, 80 g of magnesium oxide and 80 g of aluminium hydroxide are added to the dough. The waffles thus obtained contain 0.26 g of magnesium oxide and 0.26 g of aluminium hydroxide.
- 20 Example 2
- 140 g of wheat flour and 150 ml of milk are mixed, then 70 g of butter, 2 g of sodium chloride, 1 egg and 150 ml of milk are added under stirring, finally 35 g of magnesium oxide and 35 g of aluminium hydroxide are added.
- 25 The dough is baked as described in Example 1 at 130-160 °C in an oiled waffle-iron.

Example 3

4 egg whites are beaten until they are fluffy (creamy), then 140 g of powdered sugar, 70 g of wheat flour,

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35 g of magnesium oxide and 35 g of aluminium hydroxide are added. The foamy substance is spreaded on a baking tin in a very thin layer and it is baked under moderate heating for some minutes to have a light yellow colour. Then it
5 is cut into pieces having the size of 8 x 10 cm.

Example 4

The mixture of 10 kg of wheat flour, 3 kg of starch and 150 g of ammonium carbonate (baking powder) is kneaded with 25 litres of water preheated to 70 °C. Then
10 the mixture is cooled to 25 °C and 2.5 kg of magnesium oxide and 2.5 kg of aluminium hydroxide are added. After stirring the dough is allowed to stand for an hour, then it is baked in a waffle-iron at 130-160 °C.

Example 5

15 20 kg of wheat flour and 4 kg of potatoe starch are swelled for 15 minutes in 12 litres of water preheated to 60 °C, then 9 kg of margarine are added. The dough thus obtained is cooled to 20 °C, then 5 kg of magnesium oxide and 5 kg of aluminium hydroxide are added, the dough is
20 is homogenized and it is baked in a waffle iron at 120-160 °C.

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Claims:

1. Process for preparing pastry products having antacid activity characterized in that

5 24-50 % by weight of magnesium oxide and 24-50 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the known raw materials of a pastry product in any phase of the making up of the dough,

10 then the dough thus obtained is baked at a temperature between 130 and 160 °C.

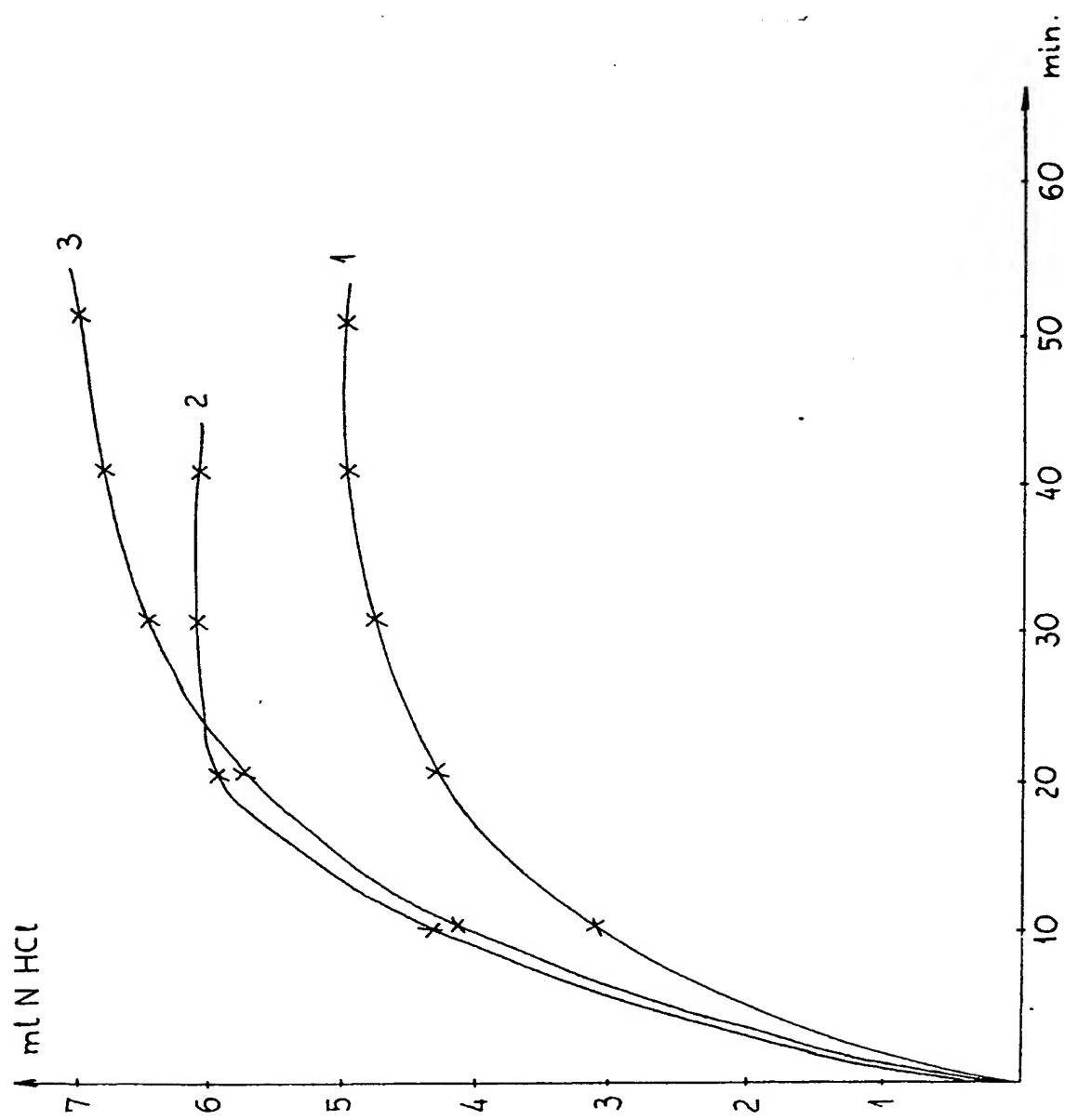
2. The process according to claim 1 characterized in that 25 % by weight of magnesium oxide and 25 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the dough.

15 3. The process according to claim 1 characterized in that 32 % by weight of magnesium oxide and 32 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the dough.

20 4. The process according to claim 1 characterized in that 40 % by weight of magnesium oxide and 40 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the dough.

25 5. The process according to claim 1 characterized in that 50 % by weight of magnesium oxide and 50 % by weight of aluminium hydroxide calculated on the weight of the flour being in the product are added to the dough.

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/HU 87/00059

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC⁴: A 61 K 33/08, A 21 D 2/02, A 23 L 1/304

II. FIELDS SEARCHED

Minimum Documentation Searched †

Classification System	Classification Symbols
Int.Cl. 4	A 61 K 33/00, A 21 D 13/00, A 21 D 2/00, A 21 D 8/00, A 23 L 1/00
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched §	

Austrian Patents

III. DOCUMENTS CONSIDERED TO BE RELEVANT*

Category *	Citation of Document, ** with indication, where appropriate, of the relevant passages ††	Relevant to Claim No. ††
A	US, A, 3 852 497 (J.S. SKELCEY et al.) 3 December 1974 (03.12.74), see totality.	(1)
A	GB, A, 1 423 608 (CHINOIN GYOGYSZER ES VEGYESZETI TERMEKEK GYARA R.T.) 4 February 1976 (04.02.76), see claims 1,2,13; example 1; page 3, lines 58-82.	(1)
A	GB, A, 1 408 983 (ARMOUR PHARMACEUTICAL COMPANY) 8 October 1975 (08.10.75), see example 5 in connection with examples 4 and 1.	(1)
A	DE, A, 1 617 277 (ARMOUR PHARMACEUTICAL COMPANY) 18 February 1971 (18.02.71), see example 10, page 38, last passage - page 39, last line.	(1)
A	US, A, 3 245 876 (J.J. MARTIN) 12 April 1966 (12.04.66), see claims 1,6.	(1)

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IV. CERTIFICATION

Date of the Actual Completion of the International Search

4 March 1988 (04.03.88)

Date of Mailing of this International Search Report

10 March 1988 (10.03.88)

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Anhang zum internatio-
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Anhang zum internatio-
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